

**Video Working Group Activities:
NTB Update**

**Anthony Galassi
12 June 1996**



Briefing Purpose

- **Discuss VWG structure**
- **Outline general VWG activities**
- **Video as an Imagery System**
- **Summary**



VWG Purpose and Goals

- **Purpose**

- Determine video requirements
- Specify video interface standards to ensure interoperability and quality

- **Goals**

- Immediate (< 6 mos)
 - » Support ongoing DARO UAV programs (e.g., Predator)
- Short Term (6 - 18 mos)
 - » Define/influence Intelligence and DoD Community video standards and profiles
- Long Term (18 mos - 3 yrs)
 - » Profile standards on wider scale
 - » ANSI
 - » NATO
 - » ISO



VWG Guidelines

- **Avoid proprietary solutions**
- **Ensure interoperability of video imagery and metadata**
- **Identify issues overlapping different subgroups**
 - Resolve issues through crossovers
 - Ensure goals of each group are represented in solution
- **Focus short-term UAV goals and needs with long-term standards development**
- **Identify other Government video users and their requirements/recommendations for video standards**



VWG Accomplishments to Date

- **Working groups formed/first meeting**

- VWG
- Video Image Quality Control Board (VIQCB)
- Metadata Subgroup (MSG)
- Video Archive and Dissemination Subgroup
- Video Exploitation Research and Development Subgroup

Dates

July 1995
January 1996
February 1996
February 1996
June 1996

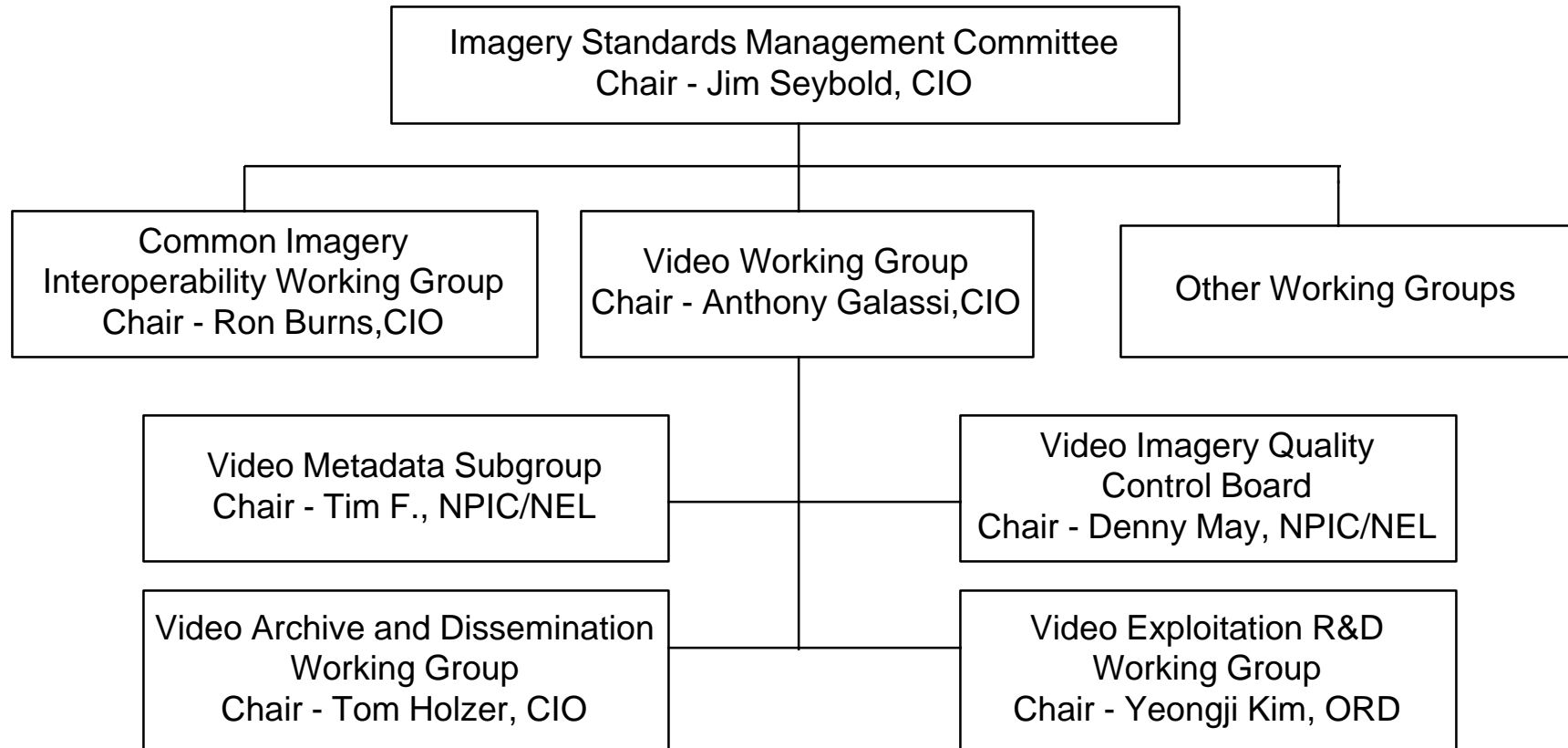
- **Activities**

- DARO/VWG/SIL to standardize UAV data format and compression
- CISA memo drafted - VWG recognized as video standards body
- Adopted MPEG-2 as the video compression standard
- Video metadata definition/implementation
- Video requirements definition
- Video image chain analysis

November 1995
December 1995
April 1996
ongoing
ongoing
ongoing



Imagery Standards





VWG Subgroups

- **Video Image Quality Control Board (VIQCB)**
 - Develop standards, guidelines, and metrics to ensure video image quality
- **A3I Video Archive and Dissemination Subgroup (VAD)**
 - Identify issues, metadata, and operational concepts required to ensure adequate storage and timely dissemination of quality video imagery
- **Video Exploitation R&D Subgroup (VERAD)**
 - Coordinate video exploitation research and development throughout the Intelligence and DoD Community
- **Metadata Subgroup (MSG)**
 - Develop community-coordinated metadata standards to support video and video-related products



NEL Motion Video Projects

- **NEL POC - Jim Watson**
- **Goal** - Define requirements for CIGSS video implementation
- **Projects**
 - CIGSSS Motion Video Concept
 - Video Products Assessment
 - Video Tools Demonstrations
 - Compression Assessment
 - Storage and Retrieval Assessment
- **Impact** - Requirements will flow into all four video subgroups



Video Metadata Activities

- **Generate strawman metadata list**
 - Determine all metadata needed for exploitation tasks
 - Strawman under development
 - Metadata partitioned for implementation
 - » Core set for basic analog implementation
 - » Extended set for implementation with supplemental bandwidth
- **Synchronize with airborne ESD efforts**
 - DARO is working airborne ESD issues
 - MSG will provide inputs and make recommendations
- **Focus on analog implementation first**
 - Television-style analog signals will continue to be used in the near future
 - Interim solution — analog is not the desired goal
 - Ensure smooth transition to digital



USG Support

- **DARO Common UAV Ground Station**
- **Predator Operations**
- **JTUAV Operations**
- **Exercises**
 - Royal Dragon (Ft. Bragg)

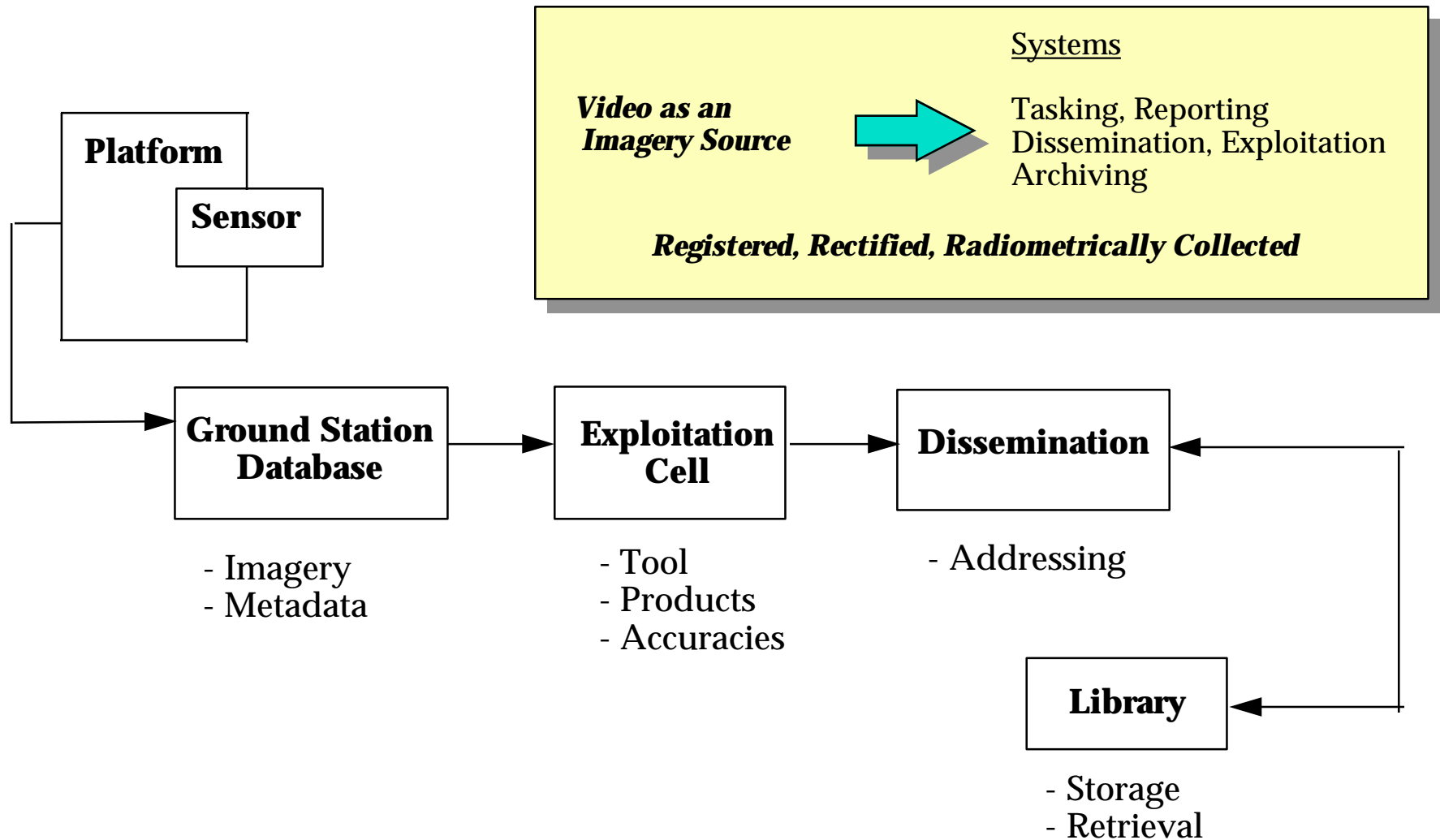


Video as an Imagery System





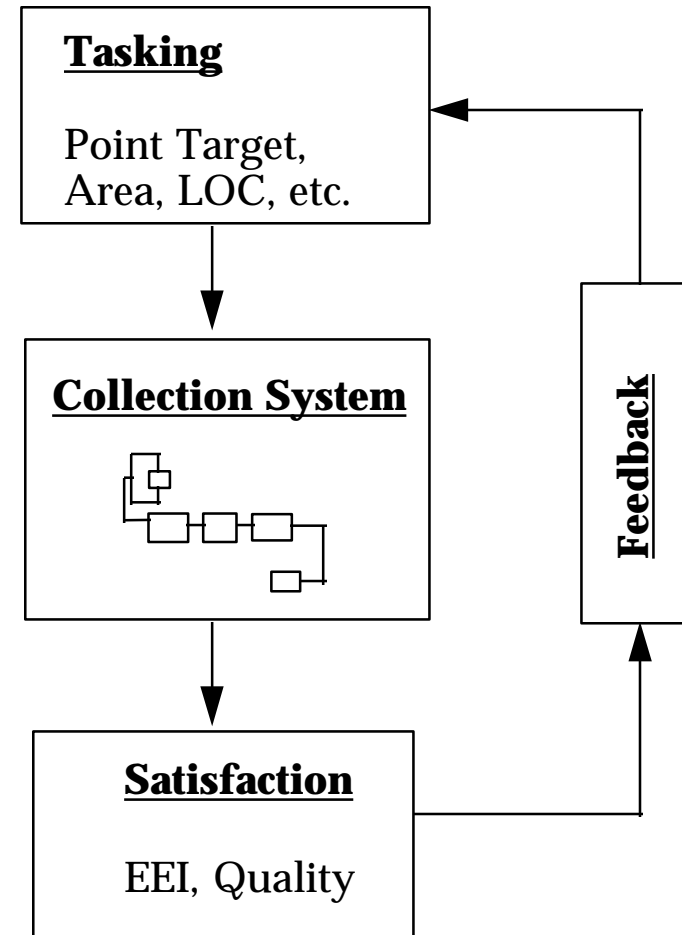
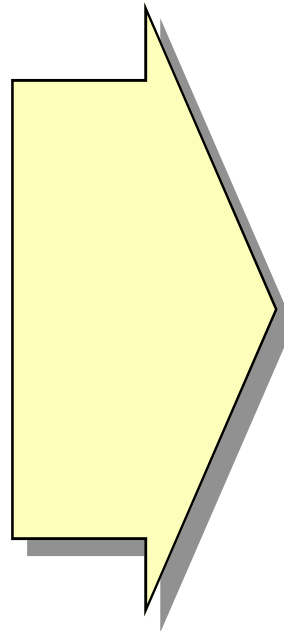
Metadata Flow





Video Quality

- EEI/Quality
 - Essential Elements of Information
 - Imagery Quality
 - » Collection System Level
 - » platform
 - » transmission
 - » Sensor Level
 - » optics
 - » altitude
 - » atmospheric





Commercial Activities

- **Attended IEEE Metadata Conference in April 1996**
 - Provide a forum to address metadata issues faced by the various communities, including mass storage, data management, image and multimedia processing, and distributed computing.
 - URL: http://www.llnl.gov/liv_comp/metadata/events/ieee-md.4-96.html
- **Attended National Association of Broadcasters (NAB) meeting in May 1996**
- **Investigating IEEE-1394 High Performance Serial Bus**
 - Low-cost, cross-platform standard for transporting digital data, including video
 - No quality loss between *digital* components
 - High data rates (100+ Mb/s)
 - URL: <http://www.firewire.org/>
 - URL: <http://www.vxm.com/21R.49.html>



Commercial Activities, Cont'd

- **Open MPEG Commercial Video Consortium**
 - Promote use of MPEG in the consumer market
 - Specify a common API across different vendors' MPEG hardware
 - Prominent members include Compaq, IBM, Intel, Microsoft
 - URL: <http://www.s3.com/support/pub/mpeg/om1.html>
 - URL: <http://www.om-1.org/>
- **Digital Video Broadcast (DVB) Commercial Video Consortium**
 - Standardize MPEG-2 digital television broadcasting systems (Audio, Video, Data)
 - 200+ private and public sector organizations from 25 countries
 - Prominent members include HP, Thomson, Sony, Deutsche Telekom
 - URL: http://www.ebu.ch/dvb/dvb_home.html
 - URL: <http://www.teecomm.com/dvb.html>



Commercial Video Interfaces: MPEG-2 Transport Streams

- **Define/influence USIS implementation of data transport**
 - Adopt commercial implementations as closely as possible
 - Lobby commercial interests to support video metadata
- **MPEG-2 Transport Stream**
 - Audio elementary stream
 - Video elementary stream
 - User private data elementary stream
- **MPEG-2 provides several locations for metadata**
 - User data within video stream
 - User private data streams multiplexed with the video stream
- **Metadata locations must be supported/protected by vendors**
 - Some data locations already used by vendor hardware
 - Not all vendors support data streams
- **Internet URLs of interest**
 - <http://www.crs4.it/~luigi/MPEG>
 - <http://www.soc.hawaii.edu/con/com437/STUD/CONTRIB/S'95A2/JM/article2.html>



Summary

- **Selecting MPEG-2 was easy**
 - International standard
 - Broad commercial support

- **Defining and implementing metadata will be tough**
 - Stored video useless without metadata
 - Requires community-wide effort
 - Commercial industry has little to offer in terms of
 - » Content
 - » Transport

- **Need firm video *requirements*, not anecdotal needs and wants**

- **Video Working Group (next meeting)**
 - 0830 hrs, 19 June 1996 at Logicon
 - 0830 hrs, 20 June 1996 at Logicon



Points of Contact

VWG Chair

Mr. Anthony Galassi
Central Imagery Office
STSD/SESD/SB
8401 Old Courthouse Road
Vienna, Virginia 22182-3820

Phone: (703) 275-5649
Fax: (703) 275-5088
Email: galassia@dma.gov

Secretariat

Logicon
1831 Wiehle Avenue
Reston, Virginia 22090

Phone: (703) 318-1074
Fax: (703) 318-1098
Email: vwg@itsi.disa.mil

CIIWG Home Page: <http://www.itsi.disa.mil/ismc/video/vwg.html>

E-Mail Reflector: Subscribe to: nitf-request@linus.mitre.org
Include in Message Body: 'subscribe nitf' + *name*

E-mail Comments to: nitf@linus.mitre.org